

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|--|------------------------------------|--|---|---|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Pierce, 1997 (1) | Yes | Sample of Gulf War women veterans who either served in the USAF active duty or were active guard or reserve members during the first Gulf War | 638 women | Observ. Study- Assess risk or prognosis | Demographics; general physical health status; gender-specific health; measures of mental health including PTSD and depression; | Survey of sample of Gulf War women veterans at two points in time, following the war and 2 years later. Women deployed to the theater had more general as well as gender-specific health problems than women deployed elsewhere. There were no differences on general mental health measures (anxiety, depression) but women deployed to the Gulf were more likely to meet diagnostic criteria for PTSD. |
| Wolfe, 1998 (2) | No | Sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991 | 2119 veterans, 184 female veterans | Observ. Study- Assess risk or prognosis | Demographics, PTSD symptomatology, general psychological well-being, war-zone exposure, health status, health symptoms, Combat Exposure Scale | Evaluated subjects 18-24 months after returning from the Persian Gulf for levels and types of health symptoms, associations between symptoms and exposures and association of other characteristics with physical health status. Veterans with >5 health symptoms were more likely to be female, unemployed, have alcohol or drug problems or be reserve or guard members. In regression analysis, symptoms were higher for those reporting exposure to poison gas. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|--|--|--|--|---|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Erickson, 2001 (3) | No | Sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991 | Time 1: 2702 men and 240 women Time 2: 2119 men and 194 women | Observ. Study- Assess risk or prognosis | Gulf War combat exposure; PTSD symptoms; Depression | Evaluates the temporal relation between PTSD and depression symptomatology in a sample of Gulf War veterans. Women were more symptomatic for both depression and PTSD than men, with symptoms increasing over time. The relation between PTSD and depression was “bi-directional” with either one potentially preceding the other. However, symptoms of hyperarousal generally preceded depression. |
| McCarroll, 2001 (4) | No | Gulf War men and women who worked in the mortuary | 352 (58 women) | Observ. Study- Assess risk or prognosis | PTSD symptoms; extent of exposure to dead; experience with dealing with the dead | Compared to pre-exposure symptoms, post-exposure intrusion and avoidant symptoms increased for all groups exposed to the dead, even when controlling for demographic variables and experience. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|--|--|--|--|---|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| King, 2000 (5) | No | Sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991 | Time 1: 2702 men and 240 women Time 2: 2119 men and 194 women | Observ. Study- Assess risk or prognosis | Reported war-zone stressor exposure; PTSD symptom severity; demographics | Evaluates the relationship between changes in reported stressor exposure and PTSD symptoms. Shifts over time in reporting stressor exposure were modestly related to PTSD symptom severity. |
| Wolfe, 1999 (6) | No | Sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991 | Time 1: 2702 men and 240 women Time 2: 2119 men and 194 women | Observ. Study- Assess risk or prognosis | Demographic, Gulf War combat exposure, PTSD symptoms | Evaluates rates and predictors of PTSD over time in Gulf War veterans. In logistic regression analysis, female gender, age, prior combat experience, and Gulf War combat exposure were predictive of PTSD. Women were more than six times as likely to meet criteria for PTSD at Time 1 than men. At Time 2, female gender, military status, military rank and Gulf War combat exposure were related to PTSD and females were more than twice as likely to meet criteria for PTSD as men. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|---|--|--|---|--|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Sharkansky, 2000 (7) | No | Sub-sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991; veterans who identified a combat-related experience as the most stressful event during deployment | Time 1: 952 men; 106 women Time 2: 845 total | Observ. Study – Assess risk and prognosis | Combat exposure; coping responses; PTSD symptoms; depression symptoms; intervening life stressors | Evaluated relationships between methods of coping with combat-related stress among Gulf War Army personnel. Individuals using more “approach-based coping strategies” had lower levels of psychological symptoms immediately upon return and 18-24 months later. Women and those reporting higher levels of combat exposure had higher levels of PTSD and depression symptoms. |
| Southwick, 1993 (8) | No | Sample from two reserve units that served in the Persian Gulf War, interviewed one month and 6 months after returning | 84 veterans; 65 men and 19 women | Observ. Study – Assess risk and prognosis | PTSD symptoms and severity; combat exposure; Desert Storm trauma questionnaire | Evaluated prospectively the development of trauma-related symptoms in veterans returning from the Persian Gulf. Scores on a combat-related PTSD scale increased significantly over the 1 to 6 month period, while PTSD symptom severity did not. There were no significant differences in combat exposure and PTSD symptoms between male and female subjects. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|--|------------------------------|--|--|---|---|--|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Kang, 2003 (9) | No | Population-based stratified sample of Gulf War veterans and non-Gulf War veterans, 1995-1997 | 11,441 Gulf War and 9,476 non-Gulf War veterans; 2123 Gulf War women and 2076 non-Gulf War women and | Observ. Study – Assess risk and prognosis | Symptom inventory for prevalence of somatic and psychological symptoms; PTSD screen; stressor severity based on combat exposure | Evaluates the prevalence of PTSD and chronic fatigue syndrome (CFS) in Gulf War and non-Gulf War veterans, and evaluates the relations between deployment-related stress and the risk of PTSD or CFS. In bivariate analysis, veterans who were female, older, non-White, enlisted and in the Army and National Guard were more likely to meet criteria for PTSD. Veterans with CFS-like illness were more likely to be younger, single, enlisted, in the Army or Marines and in the reserves. In regression analysis, Gulf veterans were 3 times as likely to have PTSD and 4.8 times as likely to have CFS. |
| Wagner, 2000 (10) | Yes - compares men and women | Sample of Gulf War army veterans from the Ft. Devens ODS Reunion Survey, a longitudinal study of 2949 US Army active, reserve and national guard soldiers deployed to the Gulf 1990-1991 | Time 2: 2108 men and 193 women | Observ. Study – Assess risk and prognosis | Demographics; PTSD symptomatology; combat exposure; psychological symptoms; health symptoms | Evaluates the relationship between PTSD symptoms in men and women veterans immediately upon returning from the Gulf War and 18-24 months later. For both men and women, PTSD symptomatology at initial assessment was predictive of self-reported health problems over time, even after controlling for the effects of combat exposure. Women veterans reported significantly more health problems though gender did not influence the impact of PTSD symptoms on health problems. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|--|-------------------------|--|-----------------------------|---|--|--|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Engel, 1999 (11) | No | All Gulf War veterans entering the Comprehensive Clinical Evaluation Program (CCEP), 7/94 – 6/95 | 13,161 veterans; 1288 women | Observ. Study – Assess risk and prognosis | Demographics; occupational impairment; stressful Gulf War experiences; PTSD symptoms; other psychiatric symptoms | Describes the prevalence of various psychological conditions in veterans enrolled in the CCEP. The most commonly diagnosed conditions were medically unexplained physical-symptom syndromes, depression and anxiety (including PTSD) and alcohol abuse. Males and females had a comparable prevalence of psychological conditions with women being more likely to have mood disorders than men. Men were more likely to have substance use disorder. |
| McCarroll, 1993 (12) | No | Volunteers from the US Army logistics school and from two military police units | 471 men and 112 women | Observ. Study – Assess risk and prognosis | Gender; anticipated stress; experience with handling the dead | Evaluates the effects of gender and experience on anticipated stress of handling the dead. Inexperienced males had lower anticipated stress than inexperienced females; but both inexperienced males and females had higher anticipated stress than their same-sex experienced counterparts. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|--|------------------------|---|---|---|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| McCarroll, 1995 (13) | No | Mortuary workers during the Persian Gulf War, 1991 | 343 men and 58 women | Observ. Study – Assess risk and prognosis | Demographics; Impact of Events Scale (IES) to measure intrusion and avoidance; mutilation questionnaire; social desirability response scale; social support | Evaluates the predictors of intrusive and avoidant symptoms in mortuary workers prior to the arrival of remains. In bivariate analyses, women had higher IES, mutilation and social support scores than men. After controlling for volunteer status and gender, the mutilation questionnaire was the best predictor of intrusion, avoidance and total IES scores for both experienced and inexperienced mortuary workers. |
| McCarroll, 2002 (14) | No | Mortuary workers during the Persian Gulf War (1990-1991) who received the dead | 300 men and 58 women | Observ. Study – Assess risk and prognosis | Demographics; experience handling the dead; volunteer status; pre-exposure measures of depression and mutilation fear; somatic symptoms | Evaluates the relationship between exposures to the dead and development of somatic symptoms. Post-exposure somatization symptoms increased significantly over pre-exposure levels for those workers with the most exposure to the dead. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|--|------------------------------|---|--------------------------------|---|--|--|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Gray, 2002 (15) | No | Sample of all regular and reserve Navy personnel who served on active duty in Seabee commands during the Gulf War (8/90 – 8/91) | 11,334 men and 534 women | Observ. Study – Assess risk and prognosis | Demographics; medical history; current symptoms and health status; health behaviors; environmental exposures | Evaluates symptoms and medical conditions in Gulf War Seabees, among the most symptomatic of Gulf War veterans. In regression analysis, female, reserve and enlisted personnel from two particular Seabee units were more likely to meet the definition of Gulf War Syndrome. In terms of exposures, exposure to fumes was most associated with Gulf War illness. |
| Stuart, 2002 (16) | Yes - compares men and women | Persian Gulf War theater veterans receiving clinical evaluations as part of DOD's Gulf War Comprehensive Clinical Evaluation Program (CCEP), 2000 | 46,633 veterans (4888 females) | Descriptive Study | Health symptoms; wartime exposures; primary and secondary physician-determined medical diagnoses | Examined the health status of male and female Gulf War theater veterans and found that the most frequent diagnoses were musculoskeletal/connective tissue diseases, ill-defined conditions and mental disorders. Female veterans were more frequently diagnosed with mental disorders. Self-reported health of veterans with symptoms was much poorer than that of veterans with no symptoms; and women had poorer health status than men. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|--|-------------------------|---|------------------------|---|---|--|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Stuart, 2003 (17) | No | Sample of Gulf War veterans in the Comprehensive Clinical Evaluation Program (CCEP), 1994-1998 | 39548 men; 4620 women | All Other Observational | Belief in exposure to nerve or mustard gas; physical symptoms, clinical diagnoses; health status | Examined risk factors for belief in exposure to potential terrorist agents and found that women, non-whites, and older veterans were more likely to report exposure. They also reported more physical symptoms during the war, were more likely to be diagnosed with a mental disorder and reported poorer health status. |
| Wolfe, 1993 (18) | Yes | Ft. Devens Operation Desert Storm (ODS) Reunion Survey of Persian Gulf Veterans 5 days after returning from the Gulf, April – July 1991 | 2136 men and 208 women | Observ. Study- Assess risk or prognosis | War Stressors – traditional wartime activities (troop engagements), nontraditional wartime activities (combat war-zone events, noncombat war-zone occurrences), deployment-related experiences; PTSD and general psychological distress measures; demographic characteristics | Evaluates the relationship between war-zone exposures and psychological readjustment in soldiers. Greater war-zone exposures and stressors were associated with worse psychological outcomes. Female gender, lack of college education, lower rank, and marital separation or dissolution were associated with poorer psychological outcome. |

The State of Women Veterans' Health Research: Results of a Systematic Literature Review

Evidence Tables

| Table 1a. Evidence Table of Stress of Military Life studies: <i>Gulf War Era</i> | | | | | | |
|---|--------------------------------|---|------------------------------------|---|--|---|
| Author | Women Veteran Specific? | Sample characteristics | Sample size [N] | Design | Main measures | Description |
| Sutker, 1993 (19) | No | Sample from National Guard and Army Reserve units deployed to the Persian Gulf by the Louisiana Army and Air National Guard and U.S. Army Reserve, surveyed 4-10 months after the war | 176 men, 39 women | Observ. Study- Assess risk or prognosis | Psychological measures including depressions, anger, PTSD; health symptoms; stressful exposures; demographic characteristics | Evaluated the relationships between war-zone stress exposure and psychological outcomes. As war-zone stress exposure increased, the frequency and severity of psychological symptoms increased. 16-24% of subjects had symptoms suggestive of clinical depression or PTSD. There were no significant differences between men and women in these findings. |
| Carney, 2003 (20) | Yes | Population-based sample of lowan men and women veterans who served in the Gulf War, 8/90 – 8/91 | 1767 men; 129 women | Observ. Study – Assess risk and prognosis | Demographics; wartime exposures; preparedness; health care use and health status | Describes the military experiences and postwar health care use of women who were deployed to the Gulf War and compares them to men and to non-deployed women. Deployed women were more often in the Army, single, without children, and college educated than non-deployed women. Deployed men and women had similar military experiences though men more often participated in combat. |
| Gilhooly, 2001 (21) | Yes | Sample of northeastern US Persian Gulf women veterans with and without symptoms of Chronic Fatigue Syndrome | 22 health subjects and 26 with CFS | Observ. Study- Assess risk or prognosis | Sexual function; genitourinary symptomatology | Evaluates association of sexual dysfunction with chronic fatigue syndrome. Female sexual dysfunction was significantly more likely in women with fatiguing symptoms, as was decreased libido. Vaginal irritation was also more likely in fatigued veterans. |